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Oral health status among pregnant women

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بسم الله الرحمن الرحيم

وَيَسْأَلُونَكَ
عَنِ الرُّوحِ قُلِ الرُّوحُ مِنْ أَمْرِ رَبِّي وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلَّا
(قَلِيلًا ﴿٨٥﴾)

صدق الله العلي العظيم

سورة الاسراء: اية ٨٥

Dedication To

I dedicate this small project to the most precious and my first teachers my parents may Allah bless them.

Acknowledgments

I owe a great many thanks to the great people who helped and supported me to complete this project**.**

My deepest thanks to (**Dr. Ali Hakiem**) my teacher and supervisor for guiding me in the article by correcting the mistakes and giving his valuable opinions in many aspect in both scientific facts and literature ones. I hope all the best and successes to him in his career and future.

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Abstract

Pregnancy involves complex physical and hormonal changes that have a significant impact on almost every organ system, including the oral cavity imposing on health professionals the need for a differentiated approach in prenatal care. Oral health is underestimated usually the pregnant women because the fear of using chemicals that can hurt their baby. Due to bad oral health in pregnancy, pregnant women can experience premature delivery, low birth weight baby, pre-eclampsia, gingival tissue ulcerations. Thus, care and maintenance of good oral health is crucial topic to be published and done to pregnant women. We discussed in this short review the most common oral health issues associated with pregnancy and how to deal with them.

Keywords: oral health, hygiene, pregnancy

Introduction

In the last decade, the importance of oral health during pregnancy has garnered the attention of policymakers, foundations, agencies, and health care providers who serve pregnant women and young children. The U.S. Surgeon General, World Health Organization, and American College of Obstetricians and Gynecologists have all recognized that oral health is an integral part of preventive health care for pregnant women and their newborns (1).

Pregnancy involves complex physical and hormonal changes that have a significant impact on almost every organ system, including the oral cavity imposing on health professionals the need for a differentiated approach in prenatal care. Female oral health is often disregarded during pregnancy by professionals who perform prenatal care and even by dentists, because they believe that dental treatment can harm the fetus (2).

Maintaining good oral health has the potential to improve the health and well being of reproductive-aged women during pregnancy and overall health later in life. The link between oral diseases and tooth loss, adverse pregnancy outcomes, cardiovascular disease, and diabetes cannot be ignored. Realization and acceptance of the importance of oral health among our patient population is critical if we are to continue to provide quality care to the women of this country (3).

Due to bad oral health in pregnancy, pregnant women can experience premature delivery, low birth weight baby, pre-eclampsia, gingival tissue ulcerations, pregnancy granuloma, gingivitis, pregnancy tumors (epulis gravidarum), loose teeth, mouth dryness, and dental erosions. The changing hormone levels in pregnancy directly affect gum problems, and indirectly, tooth decay (4).

Comprehensive prenatal health care should include assessment of oral health but this usually overlooked. This problem is compounded by a lack of national clinical guidelines for the management of common oral conditions in pregnancy. In addition to that, barriers to dental care during pregnancy include lack of practice standards, persistent myths about the effects of pregnancy on dental health, and concerns for fetal safety during dental treatment. Patients, physicians, and dentists are cautious, often avoiding treatment of oral health issues during pregnancy (5).

In this short article, we will demonstrate the most common oral health issues during pregnancy and how to treat and prevent them and their possible complications.

Pregnant women are particularly susceptible to gingival and periodontal disease. In this context, different oral lesions are reported to be common during pregnancy. In effect, an increased prevalence of dental alterations have also been documented, including particularly caries and erosions. The biochemical and hormonal changes of pregnancy enhance the risk (6). A meta-analytic review of 17 articles concluded that there was a statistically significant association between periodontitis and adverse pregnancy outcomes. Perinatal mortality rates in Pakistan and many other developing countries are more than 10-fold greater than in developed countries. In a study on periodontal disease and adverse birth outcomes in pregnant Pakistani women, it was found that they have high levels of moderate-to-severe dental disease. It was concluded that stillbirth and neonatal and perinatal deaths increased with the severity of periodontal disease (7).

Here we will mention the most common oral health issues and how to manage them.

Oral lesions

The oral cavity during pregnancy is exposed to gastric acid that leads to erosions in the teeth. The possible reasons could be that (i) in the first trimester, morning sickness is the common cause and (ii) in the later stages, a lax oesophageal sphincter and the

upward pressure from the gravid uterus can exaggerate acid reflux. Patients with severe vomiting can present with severe forms of erosions on the enamel. Rinsing the mouth with fluoride mouthwash or mixing baking soda with water or applying tooth mousse (casein phosphopeptide amorphous calcium phosphate) on the teeth after vomiting can neutralize acid. Expectant mother should be counselled not to brush their teeth immediately after vomiting. They should also be instructed to use soft or super soft (paediatric) tooth brush to avoid further damage to the gastric acid exposed enamel (8).

Figure 1.Gravid ulcers

Dental Caries

An increased prevalence of dental alterations has been documented, particularly caries (99.38%). The reasons for the pregnant women at higher caries risk are as follows: (i) increased pH in the oral cavity due to frequent vomiting, (ii) expectant mothers have cravings towards sugary snacks and (iii) less attention towards oral health. Active dental caries if left untreated can lead to local as well as systemic complications (9). Methods for dental caries prophylaxis include a series of measures such as use of fluoride topics, fluoride lacquer and gels, methods which are only applicable for accessible areas. These are especially recommended for children and pregnant women (10).

Periodontal diseases

Periodontal disease is a wide-affecting infectious disease consisting of various forms. Based on its severity, periodontal disease can be broadly classified into two

stages: gingivitis, a mild and reversible form characterized by inflammation without tissue damage; and periodontitis, a more advanced and severe form characterized by attachment and bone loss. The potential connection between periodontal disease and other systemic conditions, such as diabetes, cardiovascular disease, and preterm birth, has attracted much research attention in recent decades (11).

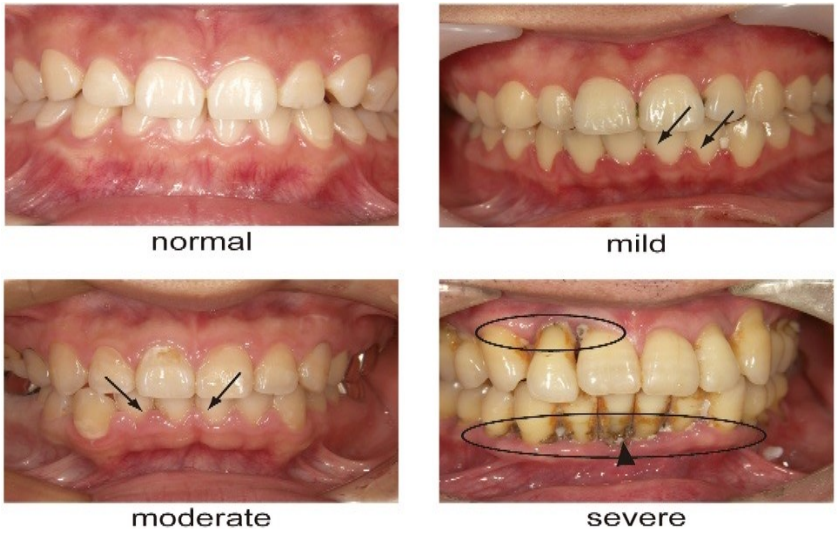

Figure 2. Stages of periodontal diseases

It was first reported in 1996 that periodontal disease was a potential risk factor for preterm birth (12). Since then, the link between periodontal infections and preterm birth has been one of the frontiers in dental research. The potential correlation has been expanded from periodontitis and preterm birth to various forms of periodontal infections and adverse pregnancy outcomes, including preterm birth, low birthweight, stillbirth, miscarriage, intrauterine growth retardation, and pre-eclampsia (12).

Pregnancy Oral Tumour

Pyogenic granuloma (or pregnancy tumour) seems to be common in the gestating female population. Increased hormone (progesterone) levels along with bacteria and local irritants (calculus) are the major reason for such a growth to occur. It usually arises during the second trimester of pregnancy. The surface clinically appears as smooth, lobulated mass which is erythematous. Common site of occurrence is the gingiva. Other locations are the tongue, palate and the buccal mucosa. The tumour grows rapidly and usually recedes soon after delivery. Frequent monitoring is the first line of management unless the tumour presents itself with bleeding (interfering with mastication). The recurrence rate is high if the tumour is surgically excised during pregnancy (13).

Rev Odont Mex. 2017;21:e244-52

Figure 3. Pyogenic granuloma

The relation between oral health and the birth outcome

Preterm birth

Preterm birth, delivery at less than 37 weeks' gestation, occurs in approximately 12% of all births. Prematurity is the leading cause of neonatal morbidity and mortality in non-anomalous infants. There are numerous and heterogeneous factors associated with preterm birth, such as low maternal body mass index, maternal smoking, and maternal infections (14).

In a case-control study of 124 pregnant women, they observed that women who delivered at less than 37 weeks'gestation or an infant <2500 g had significantly worse periodontal disease than control women. The adjusted odds ratio for delivery of a preterm, low birth weight infant was ~ 7; these data led the authors to conclude that periodontal disease may represent a previously unrecognized and clinically significant risk factor for delivery of a preterm low birth weight infant (15).

Adverse pregnancy events

Preeclampsia is a hypertensive disorder of pregnancy responsible for significant maternal and fetal morbidity and mortality. Preeclampsia affects up to 5% of pregnant women. The etiology of preeclampsia remains elusive. The underlying pathology may be related to a generalized intravascular hyperinflammatory state. Some investigators have hypothesized a potential role for maternal periodontal disease (16). as a risk factor for preeclampsia. In a retrospective analysis of data collected as part of

the Oral Conditions and Pregnancy Study, a randomized trial reported that women were at higher risk for preeclampsia if they had severe periodontal disease at delivery, or if they had periodontal disease progression during pregnancy (17).

The impact on child oral health

Cariogenic bacteria are typically acquired by young children through direct salivary transmission from their mothers The earlier the transmission and the more caries-supportive the diet, the earlier and more substantial the transfer will be. For this reason, mothers who have themselves experienced extensive tooth decay and therefore most likely harbor high titers of *mutans streptococci* in their saliva will more effectively transmit this infection vertically, thereby putting their young children at elevated risk for early childhood caries (18).

Dental Care during Pregnancy

Screening

Every pregnant woman should be assessed for dental hygiene habits, access to fluoridated water, oral problems (e.g., caries, gingivitis), and access to dental care. Oral examination should include the teeth, gums, tongue, palate, and mucosa. Patients should be counseled to perform routine brushing and flossing, to avoid excessive amounts of sugary snacks and drinks, and to consult a dentist. Status of and plans for oral health should be documented. Many dentists are reported to be reluctant to treat pregnant women. Physicians and dentists can overcome this situation through education, clear communication, and the development of ongoing collaborative relationships. Physicians can share information on the safety of dental treatment in pregnancy with dental colleagues and provide clear referral recommendations (19).

Caries risk reduction in children

In young children at risk for dental caries, interventions focus on reducing the burden of bacteria, reducing the intake of refined sugars, and increasing the resistance of teeth to caries development. Strategies to reduce the burden of bacteria include the use of fluoride, parental counseling to improve oral hygiene, xylitol, and topical antimicrobials such as chlorhexidine or povidone-iodine. Educational and behavioral interventions can reduce intake of refined sugars through changes in diet and feeding practices. Children with caries or at risk of caries can also be referred for needed dental care. Fluoride increases the resistance of teeth to caries development. Fluoride exposure can be topical (fluoride dentifrices, rinses, gels,

foams, varnishes) or systemic (dietary fluoride supplements). Effects of fluoridated water are both topical and systemic. After exposure, fluoride is incorporated into dental plaque, saliva, and tooth enamel, and increases tooth resistance to acid decay, acts as a reservoir for remineralization of caries lesions, and inhibits cariogenic bacteria (20).

Diagnosis

Radiographs are crucial for diagnosing and treating dental problems. They are considered safe even during pregnancy. To reduce the possibility of possibly hazardous effects, the patient should be exposed to very low levels of radiation. The Food and Drug Administration (FDA) has released radiological recommendations created by a committee of dental health specialists, which are still applicable during pregnancy: The operator is required to inquire if the woman is pregnant and to consider the real need and urgency of the radiography, especially if the radiation dose that will reach the uterus is greater than 1 mSv. The operator is also required to provide the patient with protection against exposure to the woman's abdomen and neck and to use the technique of long cones with the appropriate centering devices (19). Digital radiography is also safe during pregnancy. It offers the advantage of reduced radiation, of not needing films and chemical processes, and provides the images practically instantly, making it possible to print them later. However, dentists should consider the gestational age of the fetus. During the first trimester, when organogenesis takes place, the fetus is more susceptible to radiation. Doses that are considered safe during the second and third trimesters may be harmful during the first trimester. Nevertheless, high doses of radiation (greater than 0.5 Gy or 50 rad) should be avoided throughout pregnancy (28).

Routine dental treatment

Ideally, dental procedures should be scheduled during the second trimester of pregnancy when organogenesis is complete. Urgent dental care can be performed at any gestational age. The third trimester presents the additional problems of positional discomfort and the risk of vena caval compression. Propping a woman on her left side, repositioning often, and keeping visits brief can reduce problems. Deferring dental care until after delivery can be problematic because new mothers are focused on the care of their newborn and may have dental insurance only during pregnancy (21).

Medications for dental procedures

Local anesthetics such as lidocaine (FDA pregnancy category B) and prilocaine (FDA pregnancy category B) mixed with epinephrine (FDA pregnancy category C) are

safe for procedures when dosed appropriately.30 Sedatives such as benzodiazepines (e.g., midazolam (FDA pregnancy category D), lorazepam (FDA pregnancy category D), triazolam (FDA pregnancy category X) should be avoided. Nitrous oxide is not rated and its use in pregnancy is controversial (22).

How to improve the oral health

Women and their health care providers, including dentists, need more knowledge and clarification about the safety of dental treatments during pregnancy. Dental care during pregnancy is safe, and there are appropriate guidelines for the treatment of pregnant patients. Dental visits can take place during any trimester and, if urgent, should never be delayed. The risk of radiation exposure is extremely low when lead aprons are used during dental x-ray imaging. The most common medications and anesthetics prescribed by dentists are in U.S. Food and Drug Administration Category B and these drugs have not been found to be a risk to the fetus (23).

The perinatal period offers a teachable moment for oral health care and can potentially have an effect on maternal and infant. The 2013 Committee Opinion from the American College of Obstetricians and Gynecologists recommends that all health care providers assess oral health at the first prenatal visit. Subsequent prenatal visits provide numerous opportunities to implement oral health promotion interventions, including anticipatory guidance and referrals for dental care. Women's health care providers can incorporate oral–systemic health into all patient encounters from preconception counseling through prenatal and postpartum anticipatory guidance by transitioning the traditional HEENT (i.e., head, eyes, ears, nose, and throat) examination to the HEENOT (i.e., head, eyes, ears, nose, oral cavity, and throat) examination (24).

Prevention of oral diseases

Although a number of non-invasive preventive interventions, traditional health education is considered as the gold standard for imparting knowledge and encouraging parents on preventive interventions. "Traditional health education" is a means of conducting counselling sessions by health care providers and/or the dissemination of information by means of pamphlets, posters and media campaigns (25). Unfortunately, these approaches were not effective. A controlled trial suggested that

motivational interviewing (MI) counselling had a positive effect on children's dental health and was found to have a greater effect than that of traditional health education. The antimicrobial treatment (topical application of sodium fluoride (NaF) and iodine solution immediately after prophylaxis and 3 and 5 days later) for the pregnant mother, 6 and 12 months after delivery had greater influence by reducing the acquisition of MS from the mother to the children (26). A 30 month study to evaluate the effectiveness of a caries preventive regime (0.05% sodium fluoride and 0.12% chlorhexidine mouth rinse everyday during 6 months of pregnancy till 24 months after delivery) showed promising results on using combination of fluoride and chlorhexidine. Fluoride is the most widely known and accepted anti-caries agent available, and chlorhexidine is the most widely used plaque-inhibitory compound. The mechanism of action of these two agents is completely different, and their combined administration produces a synergistic effect on *streptococcus mutans* (27).

Conclusion

The oral health is a very important factor in healthy and normal pregnancy for both the mother and the infant. The health care authority should pay more attention to this side of maternal health care and train and educate the health specialists, providers and the women if we want this process to succeed.

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